Cruzane

Unit 18 was selected for the project GPS location due to preliminary GIS hydrology analysis as the most sensitive unit in the Cruzane Project Area. GPS coordinates used are 47.41 N 115.44E and an elevation of 3,739 feet.

Custom Climate generated for the project location

Climate parameters for Cruzane +

47.41°N 115.44°E; 3739 feet elevation
45 years of record

Month	Mean Maximum Temperature (°F)	Mean Minimum Temperature (°F)	Mean Precipitation (in)	Number of wet days
January	30.3	15.8	4.07	16.3
February	36.3	19.8	2.75	13.8
March	42.4	22.9	2.32	14.5
April	51.7	29.4	1.78	12.7
May	60.9	35.7	1.83	13.1
June	68.5	42.0	1.96	11.5
July	77.8	45.3	1.01	6.3
August	77.6	44.6	1.37	6.8
September	67.7	37.7	1.53	8.5
October	55.2	31.0	1.91	11.2
November	39.2	25.0	3.25	16.2
December	31.5	19.0	3.60	18.0
Annual			27.37	148.9

Show PAR | Return to input screen

INTERPOLATED DATA

Station	Weighting	Station	Weighting
Wind Stations		**Solar Radiation and Max .5 P Stations**	
MULLAN PASS ID	79.7 %	SPOKANE, WASHINGTO	43 %
SPOKANE WA	11.1 %	KALISPELL, MONTANA	35.5 %
KALISPELL MT	9.1 %	WALLA WALLA, WASHI	21.4 %
Dewpoint Stations		**Time-to-Peak Stations**	
SPOKANE WA	37.9 %	MULLAN ID	64.7 %
KALISPELL MT	31.2 %	PRICHARD 5NNW ID	18.7 %
MISSOULA MT	31 %	ENAVILLE ID	16.6 %

Modified by Rock:Clime on December 16, 2019 from WALLACE WDLND PK ID 109498 0

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descpar version 2010.04.08 (a part of **Rock:Clime**)
USDA Forest Service Rocky Mountain Research Station
1221 South Main Street, Moscow, ID 83843

Surface Soil Texture

Surface texture from the MT 0603 SSA indicated the surface texture fir most of the units are slightly decomposed plant material. Loam was used in the Disturbed WEPP Model 2.0 as the closest match.

Mature Forest – Tractor unit up to 40% slope and 100-foot SMZ. No treatment

Disturbed WEPP Results

User inputs

Location	**Cruzane +** Modified by Rock:Clime on December 16, 2019 from WALLACE WDLND PK ID 109498 0 T MAX 30.33 36.33 42.36 51.69 60.86 68.47 77.84 77.61 67.73 55.24 39.21 31.47 deg F T MIN 15.84 19.75 22.94 29.36 35.74 41.99 45.26 44.63 37.72 30.97 25.00 18.96 deg F MEANP 4.07 2.75 2.32 1.78 1.83 1.96 1.01 1.37 1.53 1.91 3.25 3.60 in # WET 16.26 13.75 14.50 12.73 13.08 11.54 6.29 6.84 8.49 11.22 16.23 18.00 days Latitude 47.41 Longitude 115.44 Elevation 3739.0 ft				
Soil texture	loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	mature forest	40 5	300	80	20
Lower	mature forest	5 2	100	90	20
Description					

Mean annual averages for 30 years

			Total in 30 years	
29.40	in.	precipitation from	4441	storms
0.01	in.	runoff from rainfall from	2	events
0.16	in.	runoff from snowmelt or winter rainstorm from	21	events
0.000	t ac^{-1}	upland erosion rate (0 kg m^{-2})		
0.000	t ac^{-1}	sediment leaving profile (0 kg m^{-1} width)		

Return period analysis based on 30 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
30 year	42.62	1.17	0.00	0.0000
15 year	37.69	1.05	0.00	0.0000
6 year	32.54	0.43	0.00	0.0000
3 year	30.85	0.06	0.00	0.0000
1.5 year	27.64	0.00	0.00	0.0000
Average	29.40	0.17	0.00	0.0000

Probabilities of occurrence first year following disturbance based on 30 years of climate

Probability there is runoff	37 %	
Probability there is erosion	0 %	
Probability there is sediment delivery	0 %	

[slope | soil | vegetation | weather | response || WEPP results]

Disturbed WEPP 2.0 Results v. 2014.04.14 based on **WEPP version 2010.100** , CLIGEN * version 4.31 *
http://forest.moscowfsl.wsu.edu/fswepp
01:13 pm Monday December 16, 2019 Pacific Time
Disturbed WEPP Run ID wepp-143784

Commercial Thin Tractor

Disturbed WEPP Results

User inputs

Location	**Cruzane +** Modified by Rock:Clime on December 16, 2019 from WALLACE WDLND PK ID 109498 0 T MAX 30.33 36.33 42.36 51.69 60.86 68.47 77.84 77.61 67.73 55.24 39.21 31.47 deg F T MIN 15.84 19.75 22.94 29.36 35.74 41.99 45.26 44.63 37.72 30.97 25.00 18.96 deg F MEANP 4.07 2.75 2.32 1.78 1.83 1.96 1.01 1.37 1.53 1.91 3.25 3.60 in # WET 16.26 13.75 14.50 12.73 13.08 11.54 6.29 6.84 8.49 11.22 16.23 18.00 days Latitude 47.41 Longitude 115.44 Elevation 3739.0 ft				
Soil texture	loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	thin or young forest	40 5	300	65	20
Lower	mature forest	5 2	100	90	20
Description					

Mean annual averages for 30 years

			Total in 30 years	
29.40	in.	precipitation from	4441	storms
0.01	in.	runoff from rainfall from	2	events
0.17	in.	runoff from snowmelt or winter rainstorm from	42	events
0.000	t ac^{-1}	upland erosion rate (0 kg m^{-2})		
0.000	t ac^{-1}	sediment leaving profile (0.001 kg m^{-1} width)		

Return period analysis based on 30 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
30 year	42.62	1.36	0.00	0.0008
15 year	37.69	1.22	0.00	0.0002
6 year	32.54	0.35	0.00	0.0000
3 year	30.85	0.13	0.00	0.0000
1.5 year	27.64	0.00	0.00	0.0000
Average	29.40	0.18	0.00	0.0000

Probabilities of occurrence first year following disturbance based on 30 years of climate

Probability there is runoff	43 %	
Probability there is erosion	0 %	
Probability there is sediment delivery	7 %	

[slope | soil | vegetation | weather | response || WEPP results]

Disturbed WEPP 2.0 Results v. 2014.04.14 based on **WEPP version 2010.100** , CLIGEN * version 4.31 *
http://forest.moscowfsl.wsu.edu/fswepp
01:15 pm Monday December 16, 2019 Pacific Time
Disturbed WEPP Run ID wepp-143893

Commercial Thin – Skyline

Disturbed WEPP Results

User inputs

Location	**Cruzane +** Modified by Rock:Clime on December 16, 2019 from WALLACE WDLND PK ID 109498 0 T MAX 30.33 36.33 42.36 51.69 60.86 68.47 77.84 77.61 67.73 55.24 39.21 31.47 deg F T MIN 15.84 19.75 22.94 29.36 35.74 41.99 45.26 44.63 37.72 30.97 25.00 18.96 deg F MEANP 4.07 2.75 2.32 1.78 1.83 1.96 1.01 1.37 1.53 1.91 3.25 3.60 in # WET 16.26 13.75 14.50 12.73 13.08 11.54 6.29 6.84 8.49 11.22 16.23 18.00 days Latitude 47.41 Longitude 115.44 Elevation 3739.0 ft				
Soil texture	loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	thin or young forest	45 5	300	70	20
Lower	mature forest	5 2	100	90	20
Description					

Mean annual averages for 30 years

			Total in 30 years	
29.40	in.	precipitation from	4441	storms
0.01	in.	runoff from rainfall from	2	events
0.16	in.	runoff from snowmelt or winter rainstorm from	35	events
0.000	t ac^{-1}	upland erosion rate (0 kg m^{-2})		
0.000	t ac^{-1}	sediment leaving profile (0.001 kg m^{-1} width)		

Return period analysis based on 30 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
30 year	42.62	1.28	0.00	0.0008
15 year	37.69	0.88	0.00	0.0003
6 year	32.54	0.55	0.00	0.0000
3 year	30.85	0.11	0.00	0.0000
1.5 year	27.64	0.00	0.00	0.0000
Average	29.40	0.17	0.00	0.0000

Probabilities of occurrence first year following disturbance based on 30 years of climate

Probability there is runoff	43 %	
Probability there is erosion	0 %	
Probability there is sediment delivery	7 %	

[slope | soil | vegetation | weather | response || WEPP results]

Disturbed WEPP 2.0 Results v. 2014.04.14 based on **WEPP version 2010.100** , CLIGEN * version 4.31 *
http://forest.moscowfsl.wsu.edu/fswepp
01:19 pm Monday December 16, 2019 Pacific Time
Disturbed WEPP Run ID wepp-144162

Regeneration Harvest – Skyline

Disturbed WEPP Results

User inputs

Location	**Cruzane +** Modified by Rock:Clime on December 16, 2019 from WALLACE WDLND PK ID 109498 0 T MAX 30.33 36.33 42.36 51.69 60.86 68.47 77.84 77.61 67.73 55.24 39.21 31.47 deg F T MIN 15.84 19.75 22.94 29.36 35.74 41.99 45.26 44.63 37.72 30.97 25.00 18.96 deg F MEANP 4.07 2.75 2.32 1.78 1.83 1.96 1.01 1.37 1.53 1.91 3.25 3.60 in # WET 16.26 13.75 14.50 12.73 13.08 11.54 6.29 6.84 8.49 11.22 16.23 18.00 days Latitude 47.41 Longitude 115.44 Elevation 3739.0 ft				
Soil texture	loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	shrubs	45 5	300	65	20
Lower	mature forest	5 2	100	90	20
Description					

Mean annual averages for 30 years

			Total in 30 years	
29.40	in.	precipitation from	4441	storms
0.01	in.	runoff from rainfall from	5	events
0.12	in.	runoff from snowmelt or winter rainstorm from	38	events
0.000	t ac^{-1}	upland erosion rate (0 kg m^{-2})		
0.000	t ac^{-1}	sediment leaving profile (0.011 kg m^{-1} width)		

Return period analysis based on 30 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
30 year	42.62	1.04	0.01	0.0092
15 year	37.69	0.67	0.00	0.0026
6 year	32.54	0.40	0.00	0.0000
3 year	30.85	0.10	0.00	0.0000
1.5 year	27.64	0.00	0.00	0.0000
Average	29.40	0.13	0.00	0.0000

Probabilities of occurrence first year following disturbance based on 30 years of climate

Probability there is runoff	43 %	
Probability there is erosion	7 %	
Probability there is sediment delivery	7 %	

[slope | soil | vegetation | weather | response || WEPP results]

Disturbed WEPP 2.0 Results v. 2014.04.14 based on **WEPP version 2010.100** , CLIGEN * version 4.31 *
http://forest.moscowfsl.wsu.edu/fswepp
01:20 pm Monday December 16, 2019 Pacific Time
Disturbed WEPP Run ID wepp-144304

Regeneration Harvest – Skyline 60% max slope in Unit 18

Disturbed WEPP Results

User inputs

Location	**Cruzane +** Modified by Rock:Clime on December 16, 2019 from WALLACE WDLND PK ID 109498 0 T MAX 30.33 36.33 42.36 51.69 60.86 68.47 77.84 77.61 67.73 55.24 39.21 31.47 deg F T MIN 15.84 19.75 22.94 29.36 35.74 41.99 45.26 44.63 37.72 30.97 25.00 18.96 deg F MEANP 4.07 2.75 2.32 1.78 1.83 1.96 1.01 1.37 1.53 1.91 3.25 3.60 in # WET 16.26 13.75 14.50 12.73 13.08 11.54 6.29 6.84 8.49 11.22 16.23 18.00 days Latitude 47.41 Longitude 115.44 Elevation 3739.0 ft				
Soil texture	loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	shrubs	60 5	300	50	20
Lower	mature forest	5 2	100	90	20
Description					

Mean annual averages for 30 years

			Total in 30 years	
29.40	in.	precipitation from	4441	storms
0.02	in.	runoff from rainfall from	6	events
0.07	in.	runoff from snowmelt or winter rainstorm from	38	events
0.000	t ac^{-1}	upland erosion rate (0 kg m^{-2})		
0.000	t ac^{-1}	sediment leaving profile (0.022 kg m^{-1} width)		

Return period analysis based on 30 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
30 year	42.62	0.54	0.02	0.0138
15 year	37.69	0.43	0.01	0.0106
6 year	32.54	0.26	0.00	0.0000
3 year	30.85	0.05	0.00	0.0000
1.5 year	27.64	0.00	0.00	0.0000
Average	29.40	0.09	0.00	0.0000

Probabilities of occurrence first year following disturbance based on 30 years of climate

Probability there is runoff	57 %	
Probability there is erosion	7 %	
Probability there is sediment delivery	7 %	

[slope | soil | vegetation | weather | response || WEPP results]

Disturbed WEPP 2.0 Results v. 2014.04.14 based on **WEPP version 2010.100** , CLIGEN * version 4.31 *
http://forest.moscowfsl.wsu.edu/fswepp
01:21 pm Monday December 16, 2019 Pacific Time
Disturbed WEPP Run ID wepp-144388

High Severity wildfire

Disturbed WEPP Results

User inputs

Location	**Cruzane +** Modified by Rock:Clime on December 16, 2019 from WALLACE WDLND PK ID 109498 0 T MAX 30.33 36.33 42.36 51.69 60.86 68.47 77.84 77.61 67.73 55.24 39.21 31.47 deg F T MIN 15.84 19.75 22.94 29.36 35.74 41.99 45.26 44.63 37.72 30.97 25.00 18.96 deg F MEANP 4.07 2.75 2.32 1.78 1.83 1.96 1.01 1.37 1.53 1.91 3.25 3.60 in # WET 16.26 13.75 14.50 12.73 13.08 11.54 6.29 6.84 8.49 11.22 16.23 18.00 days Latitude 47.41 Longitude 115.44 Elevation 3739.0 ft				
Soil texture	loam				
Element	**Treatment**	**Gradient (%)**	**Length (ft)**	**Cover (%)**	**Rock (%)**
Upper	high severity fire	60 5	300	45	20
Lower	low severity fire	5 2	100	85	20
Description					

Mean annual averages for 30 years

			Total in 30 years	
29.40	in.	precipitation from	4441	storms
0.04	in.	runoff from rainfall from	33	events
0.08	in.	runoff from snowmelt or winter rainstorm from	31	events
0.009	t ac^{-1}	upland erosion rate (0.002 kg m^{-2})		
0.004	t ac^{-1}	sediment leaving profile (0.168 kg m^{-1} width)		

Return period analysis based on 30 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
30 year	42.62	0.65	0.12	0.1092
15 year	37.69	0.55	0.06	0.0432
6 year	32.54	0.42	0.01	0.0021
3 year	30.85	0.08	0.00	0.0000
1.5 year	27.64	0.00	0.00	0.0000
Average	29.40	0.12	0.01	0.0044

Probabilities of occurrence first year following disturbance based on 30 years of climate

Probability there is runoff	67 %	
Probability there is erosion	33 %	
Probability there is sediment delivery	33 %	

[slope | soil | vegetation | weather | response || WEPP results]

Disturbed WEPP 2.0 Results v. 2014.04.14 based on **WEPP version 2010.100** , CLIGEN * version 4.31 *
http://forest.moscowfsl.wsu.edu/fswepp
01:22 pm Monday December 16, 2019 Pacific Time
Disturbed WEPP Run ID wepp-144446

Discussion

The modeled scenarios results indicate that there will not be any associated increase in upland erosion rates or sedimentation reaching stream channels in an average year. The results do indicate that there may be a very small increase in upland erosion rates of 0.01 tons per acre and a 0.01 tons per acre in sedimentation into stream channels in the steepest portions (60 % slopes) of skyline unit 18 scenario in the 15 year winter (heavy winter) and 30 year winter (El Nino type) during the FIRST year after harvest.

Results from the slope analysis for the project units show that modeled scenario for unit 18 are like units 4, 18, 20, and 70.

The Enterprise Program wetness model (WIR) was completed to ascertain if these five units had any modeled wet or unstable areas (WIR score of 6 or greater). Unit 18 was the only unit that had a small portion in the northern portion rated as a WIR score of 6. This unit has a perennial stream on the eastern borer and riparian habitat along the entire stretch of this stream along the unit. Recommendation is to drop unit 18 and the portion of unit 19 associated with this common stand boundary.